ORDER: 8300.10

APPENDIX: 3

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BULLETIN TITLE: Perform Field Approval of Major Repairs and Major Alterations

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1. PURPOSE. This bulletin provides updated information and guidance on field approvals by Aviation Safety Inspectors (ASI). It supercedes all other local, regional, and national guidance. The attachment is a revision of volume 2, chapter 1 from the Federal Aviation Administration (FAA) Order 8300.10, Airworthiness Inspector's Handbook. This chapter will be finalized and incorporated into the handbook in Change 15.

2. BACKGROUND. The FAA is issuing this bulletin to provide this updated guidance to ASIs quickly. The content of this bulletin is from a collaboration between Flight Standards Service (AFS) and the Aircraft Certification Service.

3. ACTION.

A. At their earliest opportunity, ASIs who perform field approvals should review and become familiar with the policies and procedures herein.

B. ASIs should also ensure that owners, agencies, and operators who request field approvals are familiar with this bulletin. Copies of this bulletin are available to the public online at http://www.faa.gov/avr/afs/hbaw/hbawl.htm.

4. INQUIRIES. This bulletin was developed by the General Aviation and Commercial Branch, AFS-340. Comments or questions

about this bulletin should be directed to Wayne Fry, AFS-340, at 202-493-5228.

5. LOCATION IN HANDBOOK. The material covered in this bulletin will be incorporated into FAA Order 8300.10, Airworthiness Inspector’s Handbook. However, until the new material is incorporated in Change 15, it can be placed next to the affected chapter.

/s/
David E. Cann, Manager
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Attachment

CHAPTER 1. PERFORM FIELD APPROVAL OF MAJOR REPAIRS AND MAJOR ALTERATIONS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3414/3416/3446

B. Avionics: 5414/5416/5446

C. JTA: 1.3.19

D. ATOS Elements: 1.2.2

3. OBJECTIVE. This chapter provides guidance in determining the category of a repair or alteration and ensuring that the aircraft, engine, or accessory can be returned to service in accordance with (IAW) the field approval process authorized by Title 14 of the Code of Federal Regulations (14 CFR) § 21.95, regardless of the rules under which the aircraft is operated. A field approval is data approval of a minor change to a type design that meets the scope of a major alteration.

NOTE: Aircraft operated under part 121 are not eligible for field approvals.

5. GENERAL.

A. Definitions:

(1) Major/Minor Repair/Alterations. See 14 CFR part 1.

(2) Major/Minor Type Design Changes. See §§ 21.93 and 21.113.

(3) Substantiating. To support and verify with proof or evidence.

(4) Field Approval. One of the means used by the Federal Aviation Administration (FAA) to approve technical data used to accomplish a major repair or major alteration. It is an approval, by the Administrator, through an authorized aviation safety inspector (ASI) (airworthiness), of technical data and/or installations used to accomplish a major repair or major alteration. Technical data so approved becomes "technical data approved by the Administrator." This type of approval may be accomplished for one-time approval.

(5) Acceptable Data. The drawings and specifications necessary to define the configuration and design features of the repair or alteration. These drawings and specifications include information on weight, balance, operating limitations, flight characteristics, dimensions, materials, and processes that are necessary to define the repair or alteration. The following are examples of acceptable data and may be used as a basis for developing approved data to substantiate repair or alterations:

(a) Manufacturer's manuals are acceptable data that may be used as a basis for developing approved data for major alterations.

(b) FAA Form 337, Major Repair and Alteration, when the specified data has been previously approved as a one-time alteration or repair, is acceptable data that may be used as a basis for developing approved data for subsequent alterations.

(c) Data contained in a Structural Repair Manual (SRM) that is not FAA-approved; Advisory Circular (AC) 43.13-2A, Acceptable Methods, Techniques, and Practices—Aircraft Alterations; and AC 43.13-1B, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair, as revised.

(6) Approved Data. Substantiating and descriptive technical data, used to make a major repair or alteration, that is approved by the Administrator. The following list, although not inclusive, contains sources of approved data:

- Type Certificate Data Sheets (TCDS)
- Supplemental Type Certificate (STC) data, provided it specifically applies to the item being repaired/altered. Such data may be used in whole or part as included within the design data associated with the STC
- Appliance manufacturer's manuals or instructions, unless specifically not approved by the Administrator, are approved for major repairs
- Airworthiness Directives (AD)
- FAA Form 337, which has been used to approve multiple identical aircraft, by the original modifier

NOTE: ASIs no longer approve data for use on multiple aircraft.

- U.S. Civil Airworthiness Authority (CAA) Form 337, dated before 10/1/55
- FAA-approved portions of SRMs
- Designated Engineering Representative (DER)-approved data, only when approval is authorized under his/her specific delegation
- Designated Alteration Station (DAS) FAA-approved data, when the major alteration is performed specific to the authorization granted
- Data in the form of Appliance Type Approval issued by the Minister of Transport Canada for those parts or appliances for which there is no current Technical Standard Order (TSO) available. The installation manual provided with the appliance includes the Transport Canada Aviation (TCA) certificate as well as the date of issuance and an environmental qualification statement (See paragraph 13)
- Repair data, under Special Federal Aviation Regulations (SFAR) 36, for the holder's aircraft only
- Foreign bulletins, for use on U.S.-certificated foreign aircraft, when approved by the foreign authority
- Data describing an article or appliance used in an alteration which is FAA-approved under a TSO. As such, the conditions and tests required for TSO approval of an article are minimum performance standards. The article may be installed only if further

evaluation by the operator (applicant) documents an acceptable installation which may be approved by the Administrator

- Data describing a part or appliance used in an alteration which is FAA-approved under a Parts Manufacturer Approval (PMA). (An STC may be required to obtain a PMA as a means of assessing airworthiness and/or performance of the part.)

NOTE: Installation eligibility for subsequent installation or reinstallation of such part or appliance in a Type Certificated (TC) aircraft, other than the aircraft for which airworthiness was originally demonstrated, is acceptable, provided the part or appliance meets its performance requirements and is environmentally and operationally compatible for installation. The operator/applicant must provide evidence of previously approved installation by TC, STC, or field approval on FAA Form 337 that will serve as a basis for "follow-on" field approval.

- Any FAA-approved Service Bulletins (SB) and letters or similar documents, including DER approvals
- Foreign bulletins as applied to use on a U.S.-certificated product made by a foreign manufacturer located within a country with whom a Bilateral Agreement (BA) is in place and by letter of specific authorization issued by the foreign civil air authority
- Other data approved by the Administrator
- AC 43.13-1B, for FAA-approved major repairs on non-pressurized aircraft only when the user determines that it is:

(a) Appropriate to the product being repaired;

(b) Directly applicable to the repair being made; and

(c) Not contrary to the airframe, engine, propeller, product, or appliance manufacturer's data.

(7) Approval for Return to Service. The approval given by an appropriately rated person that enables an aircraft to be returned to service.

(8) Return to Service. The action of making an aircraft operational, after an appropriately rated person grants approval.

(9) Meet the Minimum Standards Established in a TSO. Means that the equipment need not have TSO approval, but only meet requirements set by the TSO.

NOTE: For other definitions, see 8300.10 volume 1, chapter 1.

B. ASI Qualifications and Responsibilities. The ASI must be trained and authorized in the methods, techniques, and materials involved in the major repair/major alteration.

(1) The ASI must determine if, by granting a field approval, the affected product can be expected to result in safe operation and conform to regulatory requirements.

(2) If the ASI is not thoroughly familiar with all aspects of the alteration or repair, or has any doubt about the expected airworthiness, an airworthiness determination must not be given. He/she will seek assistance to the extent necessary to enable him/her to reach a clear decision before approval or denial is given.

(3) Flight Standards District Offices (FSDO) must ensure that the lack of an ASI's experience or qualifications doesn't unnecessarily stop the approval process. The lack of ASI qualifications doesn't mean the FSDOs should deny a field approval and tell the applicant that they need an STC. The ASI can send the person to a DER or Aircraft Certification Office (ACO) or anyone else who may be authorized to sign a field approval.

C. DER. If the applicant employs an appropriately authorized DER, then the ASI should coordinate activities with both the applicant and the DER. If the data addresses the entire alteration, and all of the requirements of part 21 and part 43 are met, there is no requirement for any further approval. The DER may be limited to technical areas that do not fully cover the entire project. For specific DER authorization and limitations, reference FAA Order 8110.37, Designated Engineering Representative Guidance Handbook, and AC 183.29-1, Designated Engineering Representatives Directory, as revised. The FAA must evaluate any area not covered by this approval.

> **NOTE: FAA Order 8110.37 addresses field approvals by reinforcing that DERs are not authorized to perform them. It also recommends inclusion of a note in the body of FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations, stating, "This approval is for engineering design data only and is not an installation approval." This does not prevent the data from being used as the basis for a major repair or alteration. When sufficient DER data has been obtained, the approval process applicable to the alteration is complete, such that the product can then be inspected for conformity and approved for return to service. The person performing the alteration is then responsible for conforming and approving the installation, not the DER. DER data is not a field approval, but is approved data which, like other approved data, can be used to perform major alterations or repairs without further approval.**

7. REPLACEMENT AND MODIFICATIONS PARTS. Parts or appliances developed, manufactured, and shipped before the dates established by the policy published in the Federal Register on February 27, 1995, 60 FR 10480/10482, and installed or intended for installation in type-certificated aircraft by TC, STC, or field approval process, may continue to be considered approved upon removal from the aircraft in which it was originally approved, for the purpose of repair or resale including installation in a different TC'd aircraft. The intent of this paragraph is to protect the used value of previously installed parts that were installed and approved through the field approval process prior to the Federal Register Notice.

9. ALTERATIONS NOT ELIGIBLE FOR FIELD APPROVALS. The following list describes typical projects that are not to be field aproved. This list is not all-inclusive and each project should be examined on a case-by-case basis.

A. Weight and Balance. Typical alterations that may appreciably affect the certificated weight and/or balance of a TC'd product include, but are not limited to, the following:

(1) Changes that increase the certificated maximum weight limits (increases in the maximum gross weight, increases in the maximum take-off or landing weights).

(2) Changes in the certificated center of gravity range limits (e.g., decreasing the forward limit or increasing the aft limit).

(3) Changes that alter the operational limits (maximum speed limits such as V_A, V_{FE}, V_{NE}; minimum speed limitations such as stall speed; increases in service ceiling, etc.).

B. Structural Strength. Typical alterations that may appreciably affect the structural strength of the product include, but are not limited to, the following:

(1) Changes to primary structures (structure that carries flight, ground, or pressure loads) as defined in AC 25.571-1, Damage Tolerance and Fatigue Evaluation of Structure.

(2) Substitution of engine, propeller, rotor, or airframe primary structure materials

C. Reliability. Typical alterations that may appreciably affect reliability include, but are not limited to, the following:

(1) Changes to manifolding, air induction systems or air intake doors, engine cowling or baffle that have an effect on the flow of engine cooling air and carburetor/fire ignition heat rises.

(2) Change to the basic engine or propeller design, controls, and operating limitations.

(3) Changes that include engine/propeller adjustments and settings limitations that have an effect on power output.

(4) Modifications to approved avionics equipment that have an effect on reliability or airworthiness such as:

- Changes that deviate from the design environmental performance
- Changes that deviate from the component manufacturer's operating limitations
- Changes to software
- Changes to wire shielding that may affect High Intensity Radiated Fields (HIRF) and Electronmagnetic Interference (EMI)

D. Operational Characteristics Typical alterations that may appreciably affect operational characteristics include, but are not limited to, the following:

(1) Changes or relocation of systems (including hydraulic, oil, and fuel systems) and equipment that affects structural integrity, flight, ground handling characteristics, or noise/acoustics of the aircraft.

(2) Changes that alter the movable control surfaces that have an effect on the dynamic and/or static balance, alter the aerodynamic contour of moveable control surfaces, or make changes to the weight distribution.

(3) Changes in control surface travel, control system mechanical advantage, location of control system component parts, or direction of motion.

(4) Changes in basic dimensions or external aerodynamic contour/configuration of the aircraft, such as wing and tail planform or incidence angles, canopy, cowlings, contour or radii, the location of wing and tail fairings, winglets, wing lift struts, tiptanks, windows, and doors.

(5) Installation of structures and/or appliances to the exterior (i.e., night sun, camera, spray/dusting equipment) on rotorcraft only.

(6) Changes to flight-critical electrical/electronic systems such as electronic flight controls or the engine control system (Full Authority Digital Engine Control (FADEC), Fly by Wire, etc.).

(7) Changes that affect aircraft performance, drag, engine power, revolutions per minute (RPM), or exhaust muffler.

(8) Changes affecting noise or flight characteristics.

(9) Rotorcraft items such as external search lights, skis, baskets, etc.

E. Airworthiness. Typical alterations that may appreciably affect the airworthiness of the product include, but are not limited to, the following:

(1) Changes to landing gear and related components, such as internal parts of shock struts, length, geometry of members, changes to brake and brake systems, or additions.

(2) Changes to systems that have an effect on aircraft airworthiness such as:

- Relocation of exterior fuel vents or battery vents
- Crew or passenger liquid oxygen (LOX) or on-board generating systems
- External critical access doors (Auxiliary Power Unit (APU) ram air, nacelle blowout doors, fuel drain)

(3) Major deviations to STCs.

(4) Changes to oil, hydraulic, pneumatic, and fuel lines or systems that have an effect on their operation or installation and flammability requirements, such as:

- New types of hoses and/or hose fittings that may not meet installation requirements such as flow rate and flammability requirements
- Changes to fuel dump valves
- New oil/fuel/hydraulic line materials or sealants
- Change to or addition of permanent fuel tanks or fuel system components

(5) Changes in fixed fire extinguisher or detector systems that have an effect on system effectiveness or reliability, such as:

- Relocation of discharge nozzle, detector units, or fixed fire extinguisher bottles
- Use of new or different detector components
- Decrease in amount or changes to type of extinguishing agents

(6) Changes that include the substitution of engine/APU/propeller/airframe materials that affect structural integrity, lightning protection, flight characteristics, or noise/acoustics.

(7) Any other complex special process that, if not properly performed, has a significant adverse effect on the integrity of the product.

(8) Major alterations to propellers.

F. Crashworthiness. Typical alterations that may appreciably affect the crashworthiness of the product include, but are not limited to, the following:

(1) Changes to the aircraft structure, cabin interiors, or equipment relocation that have an effect on crashworthiness.

(2) Changes that increase the certified seating capacity, excluding sport parachute jumping configuration.

(3) Changes that include the substitution of engine/propeller/airframe materials that affect fire protection, lightning protection, or flammability.

G. Other equipment that the FAA has determined, while not a "major type design change," is a unique or complex installation that requires an STC, unless specifically identified by the Administrator as a candidate for the field approval process.

(1) Installation of equipment used for primary means of navigation such as heads up displays (used for primary navigation), Traffic Alert and Collision Avoidance System (TCAS), autopilots, flight data recorder (FDR), ground proximity warning systems (GPWS), electronic flight instrument service (EFIS), Terrain Awareness and Warning System (TAWS)-A, and Emergency Vision Assurance System (EVAS).

(2) Changes in engine or flight control systems.

(3) Installation of new or modification of existing icing protection systems.

(4) Changes that alter dynamic components of rotorcraft (e.g., loads, vibration, fatigue, damage tolerance, flaw tolerance, characteristics of main or tail rotor system, transmission system, gear box, driveshafts, driveshaft support bearings, main and tail rotor blades.)

NOTE: RPM changes of main and tail rotor systems may affect handling performance characteristics and/or noise or acoustics.

(5) Changes to TSO articles that do not meet the minimum standards of the TSO.

(6) Changes that alter critical or life-limited parts, including engine/APU rotating parts.

(7) Changes that are inconsistent with the required actions of an existing AD.

(8) Changes that alter systems required for Extended Twin Engine Operations (ETOP) of approved aircraft.

(9) Changes that increase the differential pressure limits of an atmospheric or climatic control system of aircraft interior compartments.

(10) Alteration of passenger-carrying aircraft to an all-cargo or combi configuration.

11. PROJECTS THAT MAY REQUIRE ACO CONCURRENCE AND/OR REVIEW.

A. Field approvals are, by design, major alterations that constitute minor changes to the type design. The Changed Product Rule, § 21.101, does not apply to minor changes in type design. It does apply to major changes that are accomplished using STCs or Amended Type Certificates (ATC); therefore, the

Changed Product Rule does not cover field approvals. Engineering assistance and advice may be requested when working in areas that include:

(1) Any alteration that requires a change to a flight manual or existing placards (unless specifically authorized) or operating limitations, Minimum Equipment Lists (MEL), or cargo loading instructions (see paragraph 17A and B);

(2) Any alteration that would require flight testing to show compliance with the regulations (N/A to operational check flights conducted under § 91.407 (b));

(3) Use of synthetic covering material;

(4) Substitution of parts;

(5) New titanium applications;

(6) Ceramic coatings;

(7) New magnesium applications;

(8) Use of synthetic resin glues;

(9) New plating coatings;

(10) Welding of certain types of propeller or engine parts;

(11) Any change to a required aircraft instrument system not specifically authorized by a bulletin, FAA Order, or an AC (i.e., digital clock);

(12) Initial installation of litter systems;

(13) Changes that affect emergency exits (i.e., all cargo, cargo/passenger configurations, emergency medical services, and sport parachute jumping);

(14) Changes to TC'd passenger seating configuration not listed in the TCDS or Flight Manual; and

(15) Installation of structures and/or appliances to the exterior (i.e., FLIR, camera, spray/dusting equipment) on rotorcraft.

B. The ASI, not the operator, should make a request for engineering evaluation, assistance, and/or approval of non-approved engineering data for field approvals. When the alteration or repair data file is forwarded to engineering for review, a memorandum of transmittal must accompany the file. When necessary, the transmittal will provide pertinent and detailed information not contained in the submitted data, such as the ASI's (airworthiness) recommendations, viewpoints, and specific requests for advice. Notification in writing, which becomes an attachment to FAA Form 337, must be received from the ACO before proceeding with the field approval. When engineering assistance is requested for field approval purposes, the ASI who will complete the field approval is expected to coordinate and implement the assistance requested by engineering. Be aware that the data evaluated by FAA engineering may not cover all the steps and procedures needed to accomplish the alteration or repair.

13. INCOMPLETE AND/OR PIECEMEAL INSTALLATIONS.

A. Incomplete or piecemeal installation field approvals are intended to approve partial-major alterations on aircraft that will be operated for an unspecified period of time. Aircraft having an incomplete equipment installation may be released for service only if the following has been accomplished:

(1) The alteration data has been FAA-approved;

(2) The incomplete/piecemeal alteration has been determined to not affect the safe operation of the aircraft;

(3) The equipment installed remains deactivated and has placards affixed to prevent use;

(4) The weight and balance reflects the incomplete installation; and

(5) The maintenance records have been completed and signed for the work that was actually accomplished.

NOTE: In order to maintain an effective Certificate of Airworthiness, the approval for return to service must be accomplished by an authorized person as defined in § 43.7.

B. The applicant must conduct a conformity inspection on the completed alteration. FAA approval of the piecemeal installation may provide for use of installed equipment if it can be determined that such equipment can be used safely (i.e., may require placards, Flight Manual Supplements, crew training.)

15. APPROVAL OF MAJOR/MINOR DATA BY TCA OR CANADIAN DESIGNATED AIRWORTHINESS REPRESENTATIVE (DAR) (CANADIAN EQUIVALENT TO A U.S. DER). Under the bilateral agreement with Canada, major and minor repair or alteration data approved by the TCA for use on aircraft that has a TC issued IAW § 21.29, for import products, is considered FAA-approved data. FAA Form 337 is required before operation of the U.S.-registered aircraft altered IAW Canadian data.

A. The FAA has agreed that repair data indicating TCA or DAR approval is acceptable under the present bilateral agreement. At present, acceptability of the TCA or DAR approved data is limited to products manufactured in Canada under the provisions of § 21.29. These types of data include:

- Service Bulletins
- Structural Repair Manuals
- Vendor Manuals
- Aircraft Flight Manuals
- Overhaul and Maintenance Manuals
- Specific Repair Data (major/minor)
- Fatigue and Damage Tolerance Items

B. Each of the above should contain a statement that the document is approved (include specific TCA/ DAR).

C. TCA Form AE-100, Statement of Compliance (equivalent to FAA Form 8110.3, Statement of Compliance), can accompany data and can be signed by either TCA-approved DAR or TCA airworthiness authority.

17. FLIGHT TEST/OPERATIONAL CHECK REQUIREMENTS AND LIMITATIONS.

A. An alteration requiring a § 21.191(b) flight test to show compliance with the regulations must be coordinated with the appropriate engineering office or flight test DER. An Experimental Airworthiness Certificate to show compliance must be authorized by the Manufacturing Inspection District Office (MIDO) IAW FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products, as revised. If the flight test is unsatisfactory, the applicant must develop additional data.

B. Alterations requiring a flight manual supplement or operations limitations changes must be coordinated with the ACO, unless specifically authorized for a Flight Standards inspector to sign.

C. Any alteration or repair that will not appreciably change the aircraft flight characteristics or substantially affect its operation in flight must be operationally checked IAW § 91.407 and the results recorded on the aircraft records.

19. FAA FORM 337, MAJOR REPAIR AND ALTERATION.

A. Types of Field Approval Data/Alteration Approvals.

(1) Data/alteration approvals issued for one aircraft are applicable only to the aircraft described in Block I of FAA Form 337. The data/alteration may be used as acceptable data as a basis for obtaining approval on other aircraft.

NOTE: ASIs must not approve data for use on multiple aircraft.

(2) Data based on inspection or testing, such as approval of technical data by physical inspection (see section 2, paragraph 5D(3)).

B. Recording Data Deviation. Alterations that use data that does not differ appreciably from previously approved data do not require new or additional approval. Minor deviations that have no bearing on safety are acceptable without formal approval and without submission of a formal application by the applicant. A field approval is not required; however, the deviation should be recorded on FAA Form 337.

C. Disposition of FAA Form 337. Upon receipt of FAA Form 337, accomplish the following:

(1) Review the form to ensure that all airworthiness requirements are met;

(2) Ensure that all applicable sections, signatures, and dates are affixed to the form;

(3) Ensure that the office identifier and the inspector's initials are entered in the place provided, in the upper right-hand corner of the form; and

(4) Mail the form to Civil Aviation Registry, AFS-700, P.O. Box 25724, Oklahoma City, OK 73125.

D. Alterations to Fuel Tanks and/or Systems. Within 24 hours of receipt of an FAA Form 337 that describes a modification to an aircraft fuel system or shows additional fuel tanks installed in the passenger or baggage compartment, review and mail as in C(1) through (4) above.

NOTE: Military aircraft, foreign-registered aircraft, and component parts not installed on an aircraft cannot have FAA Form 337 submitted to AFS-700. This is because they cannot be identified by aircraft make, model, serial number, and U.S. Registration Number.

21. INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICA).

A. Section 21.95 authorizes the field approval process. The Administrator has determined that the field approval data package must include ICAs. The purpose of the ICA is to provide instructions on how to maintain aircraft that are altered and appliances that are installed IAW a field-approved major alteration. The ICA checklist (Figure 1-1) is a guide for both the applicant who creates the ICA and the FAA Flight Standards inspector who accepts the ICA. The ICA developed IAW this guidance constitutes methods, techniques, and practices acceptable to the Administrator. If the ICA for the submitted field approval major alteration is not acceptable to the FAA inspector, that inspector should not sign Block 3 of the applicant's FAA Form 337.

B. The ICA provides the aircraft owner/operator with the following advantages (Ref. Block 8 of Form 337):

(1) The major alteration and reference to ICA is contained in one document;

(2) The ICA becomes a permanent aircraft record as required by § 91.417(a)(2)(vi); and

(3) The owner/operator can contact FAA registry for a replacement FAA Form 337 if the ICA is lost or destroyed. The additional reference to the presence of ICA as part of the major alteration in the aircraft's maintenance entry will ensure that maintenance personnel appropriately address ICAs during future inspections.

C. The applicant is to develop the ICA and present it in conjunction with the field approval request. The FAA inspector accepts the ICA if it meets the applicable requirements in part 23, § 23.1529; part 25, § 25.1529; part 27, § 27.1529; part 29, § 29.1529; part 31, § 31.82; part 33, § 33.4; and part 35, § 35.4. The checklist in Figure 1-1 is a guide so the applicant can be assured that all applicable requirements are met.

D. For field-approved major alterations to aircraft, engines, and propellers certificated under the Civil Air Regulations (CAR), the ICA must meet the original type design requirements. In cases where the major alteration is a total new design, or a substantial complete redesign which the CAR did not address, the major alteration must meet the applicable 14 CFR (ref. § 21.101). The checklist provides acceptable guidance for these types of installations.

E. The ICA requirements are the same for a field-approval or STC. The vast majority of field-approved major alterations are simplistic in design and execution. Therefore the applicant's ICA may not need as much detail as an ICA required for a complicated STC. If the manufacturers' instructions are not available, the applicant may use FAA publications such as AC 43.13-1B and AC 43.13-2A; appendix D of part 43, as revised; or other applicable aviation standards to develop the ICA.

F. Major alterations approved before 10-07-98 were not required to have ICAs. However, if an owner/operator wishes to formally incorporate an ICA for existing field-approved major alterations, they may do so using the revision process in the checklist's item number Figure 1-1.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 21, 43, and 65
- Successful completion of the Airworthiness Inspector's Indoctrination Course for General Aviation and Air Carrier Inspections or previous equivalent FAA training
- Successful completion of the Aircraft Alterations and Repair Course
- Identification and authorization to perform field approvals by the Flight Standards District Office (FSDO) office manager, in the form of a signed statement of authorization placed in the ASI's file or in the office manual (the authorization will state that the ASI is authorized to perform field approvals)

B. Coordination. This task may require coordination or assistance from FAA engineering, other technical personnel, and the operator. Direct communication between field personnel to permit a rapid exchange of technical information is recommended.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- 14 CFR parts 1, 21, 23, 25, 27, 29, 31, 33, 34, 35, 36, 39, and 91
- Applicable Special Federal Aviation Regulations (SFARs)
- FAA Order 8310.6, Airworthiness Compliance Check Sheet Handbook
- FAA Order 8340.1, Maintenance Bulletins
- FAA Order 8000.42, Authorization to Develop and Use Major Repair Data Not Specifically Approved by the Administrator
- FAA Order 8000.50, Repair Station Production of Replacement or Modification Parts
- FAA Order 8110.37, Designated Engineering Representative (DER) Guidance Handbook
- FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products
- AC 20-114, Manufacturer's Service Documents
- AC 33.4-1, Instructions for Continued Airworthiness
- AC 43-9, Maintenance Records
- AC 43.9-1, Instructions for Completion of FAA Form 337 (OMB No. 2120-0020), Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)
- AC 43.13-1, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair

- AC 43.13-2, Acceptable Methods, Techniques, and Practices—Aircraft Alterations
- CAR 3, 4a, 4b, 6, 7, and 8
- Bulletin 7A, 7H, and 8
- TCDS

B. Forms:

- FAA Form 337, Major Repair and Alteration
- FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations
- FAA Form 8110-12, Application for Type Certificate, Production Certificate, or Supplemental Type Certificate

C. Job Aids:

- FAA Order 8310.6, Airworthiness Compliance Check Sheet Handbook
- Figure 1-1, ICA Checklist
- Figure 1-2, Decision Flow Chart for Field Approval Process

5. PROCEDURES.

A. Review the Applicant's Request for a Field Approval. Ensure that the information supplied is complete enough and is appropriate to proceed with the field approval process for the proposed alteration or repair. The applicant should specify the certification rule used as a basis for the field approval (ref. § 21.101.)

(1) Review and evaluate the following before the operator starts the actual work, as applicable:

(a) A formal request submitted on one of the following:

- FAA Form 337 completed in duplicate (in triplicate for extended range fuel tanks)
- Other administrative forms used by a manufacturer or operator that are acceptable to the Administrator, such as engineering orders

(b) Proposed Flight Manual Supplements.

(c) FAA Form 8110-3.

(d) The description of the proposed alteration or repair to ensure that it correctly and accurately describes the alteration or repair.

(e) Methods, sketches, drawings, stress analyses, photographs, electrical load analyses, etc., to ensure that the operator has considered all applicable design standards and has analyses to substantiate the findings in this regard. The inspector must consider at least the following:

- The certification basis, including special conditions (fail safe, damage tolerance, etc.)
- The structural requirements that may be affected by the alteration or repair

- Any hazards that may affect the aircraft or its occupants
- Weight and balance computations
- Operating limitations
- Any other factors affecting safety or airworthiness

(f) Ensure that all ground and flight tests and operational checks meet applicable certification requirements to substantiate the alteration or repair.

(g) Instructions for continued airworthiness.

(2) If data is not complete, the operator must supply any additional information needed.

B. Evaluate the Proposal. Determine if the applicant has conducted a conformity evaluation to ensure that the proposed alteration will not impact the airworthiness of the aircraft. The applicant will provide verification that he/she has accomplished at least the following:

(1) Reviewed the aircraft records for previous alterations and repairs to ensure there is no effect on the proposed alteration or repair.

(2) Inspected the aircraft for:

- Previous alterations or repairs that may not have been recorded
- Compatibility of previous alterations or repairs with intended alterations or repairs

C. Evaluate Data Package.

(1) If a determination is made that the proposed alteration is beyond the scope of a field approval, advise the applicant that an STC is necessary. Assistance to the applicant will include the following:

- Furnish FAA Form 8110-12 application for an STC
- Advise that supporting data must be attached

(2) If assistance from engineering is needed for approving a major alteration/repair, contact FAA engineering. Coordination with the applicant will include the following:

(a) Request that the applicant provide all supporting data.

(b) Caution against proceeding with the alteration/repair before receiving engineering approval.

(c) Provide the applicant with proposed schedule for completion of the project that is consistent with available resources.

(d) Specific Authorization:

- Flight Manual Supplement signature authority may be authorized by ACs, bulletins, or other written documentation

- Interior compliance inspections as authorized by an ACO
- Other written authorizations as requested by the ACO and MIDO during the coordination process

D. Data Package Accepted for Field Approval.

(1) If engineering assistance was requested, written ACO concurrence becomes an attachment to FAA Form 337.

(2) Approval for Data Only. If the repair or alteration data complies with regulations, record data approval by entering the appropriate statement and signing Block 3 of FAA Form 337; return both copies to the applicant. When recording FAA approval in Block 3, use one of the following statements for approval of technical data by examination of the data for use on only one aircraft:

> "The technical data identified herein has been found to comply with applicable airworthiness requirements and is hereby approved for use only on the above described aircraft, subject to conformity inspection by a person in § 43.7."

(3) Approval of Technical Data by Physical Inspection. Schedule a physical inspection with the applicant to verify workmanship and compliance of the data submitted. If the repair or alteration complies with regulations, record alteration approval by entering the appropriate statement and signing Block 3 of FAA Form 337, and return copies to the applicant. When recording FAA approval in Block 3, use the following statement:

> "The alteration or repair identified herein complies with the applicable airworthiness requirements and is approved for use only on the above described aircraft, subject to conformity inspection by a person in § 43.7."

NOTE: ASIs must not approve data for use on multiple aircraft.

(4) Denial of Proposed Alteration/Repair. If the applicant is unwilling or unable to comply with the requirements to obtain the requested field approval, terminate the process by notification in writing to the applicant. This notification should include the reason for denial.

NOTE: The applicant should be given the opportunity to make corrections as necessary.

E. Instructions for Continued Airworthiness. ASIs will ensure that each major alteration approved under the field approval process will have ICA prepared IAW §§ 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, or 35.4, as applicable. The ICA will be documented on FAA Form 337. The ASI will advise the applicant that the entry for the major alteration in the aircraft's maintenance records required by § 43.9 will also include a reference to the ICA and identify FAA Form 337 where the instructions are documented. The form will be kept in the aircraft's permanent records IAW § 91.417(2)(vi). The checklist in Figure 1-1 is a guide so the applicant can be assured that all applicable requirements are met.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Completion of this task can result in the approval of the data, alteration, or repair, reference to the ACO for an STC, or denial of a request for a field approval.

9. FUTURE ACTIVITIES. None.

FIGURE 1-1. ICA CHECKLIST

A/C Make: _____ Model: _____ S/N: _____ Reg. #N: _____

Revision: _____ Date: _____

System: _____

Item	Subject
1.	**Introduction:** This section briefly describes the aircraft, engine, propeller, or component that has been altered. Include any other information on the content, scope, purpose, arrangement, applicability, definitions, abbreviations, precautions, units of measurement, referenced publications, and distribution of the ICA as applicable.
2.	**Description:** Of the major alteration, its functions, including an explanation of its interface with other systems, if any.
3.	**Control, operation information:** Or special procedures, if any.
4.	**Servicing information:** Such as types of fluids used, servicing points, and location of access panels, as appropriate.
5.	**Maintenance instructions:** Such as recommended inspection/maintenance periods in which each of the major alteration components are inspected, cleaned, lubricated, adjusted, tested, including applicable wear tolerances and work recommended at each scheduled maintenance period. This section can refer to the manufacturers' instructions for the equipment installed where appropriate (e.g., functional checks, repairs, inspections). It should also include any special notes, cautions, or warnings, as applicable.
6.	**Troubleshooting information:** Information describing probable malfunctions, how to recognize those malfunctions, and the remedial actions to be taken.
7.	**Removal and replacement information:** This section describes the order and method of removing and replacing products, parts and any necessary precautions. This section should also describe or refer to manufacturer's instructions to make required tests, trim checks, alignment, calibrations, center of gravity changes, lifting or shoring, etc., if any.
8.	**Diagrams:** Of access plates and information, if needed, to gain access for inspection.
9.	**Special inspection requirements:** Such as X-ray, ultrasonic testing, or magnetic particle inspection, if required.
10.	**Application of protective treatments:** To the affected area after inspection and/or maintenance, if any.
11.	**Data:** Relative to structural fasteners such as type, torque, and installation requirements, if any.
12.	**List of special tools:** Special tools that are required, if any.
13.	**For commuter category aircraft:** The following additional information must be furnished, as applicable: A. Electrical loads. B. Methods of balancing flight controls. C. Identification of primary and secondary structures. D. Special repair methods applicable to the airplane.
14.	**Recommended overhaul periods:** Are required to be noted on the ICA when an overhaul period has been set by the manufacturer of a component, or equipment. If there is no overhaul period, the ICA should state for item 14: "No additional overhaul time limitations."

FIGURE 1-1. ICA CHECKLIST
(Continued)

15.	**Airworthiness limitation section:** Include any "approved" airworthiness limitations identified by the manufacturer or FAA Type Certificate Holding Office (e.g., an STC incorporated in a larger field approved major alteration may have an airworthiness limitation.) The FAA inspector should not establish, alter, or cancel airworthiness limitations without coordinating with the appropriate FAA Type Certificate Holding Office. If there are no changes to the airworthiness limitations, the ICA should state for item 15: "No additional airworthiness limitations" or "Not Applicable."
16.	**Revision:** This section should include information on how to revise the ICA. For example, a letter will be submitted to the local FSDO with a copy of the revised FAA Form 337 and revised ICA. The FAA inspector accepts the change by signing block 3 and including the following statement: "The attached revised/new Instructions for Continued Airworthiness (date_____) for the above aircraft or component major alteration have been accepted by the FAA, superceding the Instructions for Continued Airworthiness (date_____)." Once the revision has been accepted, a maintenance record entry will be made, identifying the revision, its location, and date of the Form 337.

FIGURE 1-2. DECISION FLOW CHART FOR FIELD APPROVAL PROCESS